

ROYAL INSTITUTE OF INFORMATION & MANAGEMENT

Computer Hardware

Course Contents :

A+ Operating System Technologies:

- Introduction to Computers
- Types of Software & languages

Introduction to Operating System (DOS):

- Introduction to OS Booting sequence in DOS
- Internal & external commands.

Working with Windows 98 :

- Hardware profiles
- System and memory Resource management
- Boot sequence
- System management and maintenance tools
- Registry monitoring tools and troubleshooting resources.

Working with Windows 2000:

- Installing Windows 2000 Professional and Server
- Administration tools
- Microsoft Management Consoles
- Basic disk management
- The boot process
- System recovery using safe mode
- Using Device manager.

A+ PC Support (Core Hardware):

Assembling & Installation:

- Add on card identification
- Assembling a computer

- Installation of DOS, 95,98,ME, MS-Office etc.,
- Configuration of display, sound card.

Basic Electronics:

- Resistors, capacitors and Inductors
- Conductors, Insulators and semiconductors
- Comparison between AC and DC Current
- Diodes and transistors
- Rectifiers and voltage Regulators.

Digital Electronics:

- Number System and conversion
- Basic logic gates (NOT, AND, OR)
- Universal gates (NAND, NOR)
- Flip flops (RS, D and JK)
- Counters, Shift registers
- Multiplexer and De-multiplexer
- Introduction to Integrated Circuits.

Microprocessor and Support chips:

- Difference between 8085,8086 and 8088
- Data, Address and control bus
- Dumb and Smart chip
- Use of 8284,8288, 74LS245, 74LS373, in a PC
- Use of 8237,8253.8255 & 8259 in a PC.

Advanced Microprocessor:

- Difference between PC-XT & PC-AT
- Processor speed ratings
- Study on Intel 80286, 80386, 80486
- Study on Pentium, MMX, Pentium Pro, Celeron, PII, PIII,P4, Xeon
- Study on Hyperthreading and Dual-Core Technology
- Pipelining and superscalar execution
- Difference between RISC and CISC
- Discussion on Overdrive processor

- Processor performance tests
- AMD- K5, K6, K7, Athlon, Duron, Cyrix- M II, Media GX
- Multiprocessor configuration.

Using System Resources and Memory:

- Managing IRQ and I/O Base addresses.
- Configuring DMA Channels
- Troubleshooting resource conflicts
- Memory management
- The system and logical Memory Layouts
- Adapter Memory Configuration and optimization
- Different Memory types

Motherboards:

- Socket identification & I/O Slots
- Study on LX, BX, ZX, 810,820, 815, 840 and 850 motherboard
- Upgrading the motherboard and the processor
- Bus Slots and I/O Cards
- Types of I/O Buses (ISA, EISA, MCA, VESA, PCMCIA and PCI)
- Study on Notebook and Laptop architecture.

Storage Devices:

- Floppy Disk Controller and drive
- Read/write Heads and Head Actuators
- Sensors and motors in a FDD
- Analyzing floppy disk and drive construction
- Data organization in floppy disk
- Analyzing problems in FDD.

Hard Disk Drives:

- Data encoding scheme (FM, MFM, RLL)
- Different HDD interface (ST-506/412, ESDI, IDE)
- Study on SCSI interface
- Data organization (MBR, DBR, FAT)
- Data recovery using Various tools

- Hard Disk Limitations (File System and BIOS)
- Introduction to Disk Arrays (RAID)
- Analyzing and troubleshooting Hard Disk Drive
- Introduction to Tape Drives.

Optical Storage Device:

- Introduction to CD-ROM, DVD, CD-RW
- Encoding and data organization in CD-ROM
- Multiread and Universal Disk Format (UDF)
- Troubleshooting CD-ROM Drives
- Introduction to MO Drives.

VIRUS:

- Virus History
- Types of viruses (Trojans, File, Boot sector, etc.)
- Installing different Antivirus packages.

Communication Ports and modem:

- Using communication ports and devices
- Serial port configuration
- Null Modem Configuration (RS-232)
- Modem Standards
- Configuring modem for internet connectivity
- Internet concept and browsing
- Introduction of USB.

Parallel Ports and Printers:

- Parallel port configuration
- Detecting and testing Parallel port using DEBUG
- Introduction to Printers
- Printer working concepts (DMP, inkjet, LaserJet)
- Detailed study about dot-matrix and inkjet printers
- Troubleshooting printer
- Introduction Scanners.

Software and Hardware Diagnostic Tools:

- Power-on Self Test (POST)
- Using AMIDIAG, Norton Diagnostics, QAPLUS and MSD
- GUI based Diagnostics Utility.

Operating system and hardware troubleshooting:

- Differentiating problems between Hardware, software and OS
- Potential system problems
- Diagnosing problems through Beep Sounds
- Analyzing and repairing hardware problem
- Advanced Troubleshooting.

Monitors and Power Supply:

- Power supply functions and operation
- AT and ATX power supply
- Repairing a power supply
- Introduction to monitors
- Identifying different sections in monitor
- Basic troubleshooting of monitors.

Introduction to Networking:

- Network Cabling and Interfaces
- Introduction to Baseband and broadband
- Network Cable Types (Co-axial, Twisted pair, Fiber Optic)
- Network Technologies (Ethernet, Token Ring)

Networking with Windows 98 and 2000:

- Discussion on TCP/IP.
- Installing Network adapters, protocols and services
- Discussion of Workgroup or Domain models
- Mapping network and printer connections.